

REMARKS

Reconsideration and continuing examination of the above-identified application is respectfully requested in view of the amendments above and the discussion that follows.

Claims 1 through 20, 27 and 30 through 51 have been cancelled. Claims 21, 22, 23, 25, 26, 28 and 29 have been amended. Claims 52 through 57 have been added. Claims 21-26, 28-29 and 52-57 are in the case and are before the Examiner.

A. The Amendments

Claims 1-20 and 30-51 have been cancelled in view of the Requirement for Restriction. Claim 27 is cancelled herein. Claims 52-57 have been added.

In addition, claims 22, 23, 25, 26, 28 and 29 have been amended to add the words "in vitro" or "in vitro reaction" to improve syntax in view of the language of claim 21. Claim 28 has also been amended to change the font for "in situ" from a regular font to italics. A hyphen was also added in claim 28.

Claim 21 was also amended to recite that the amount of a nucleoside-diphospho fucose-forming enzyme is a "catalytic amount". The dependencies of claims 25 and 26 have been amended pursuant to the Examiner's helpful suggestions.

New claims 52-57 recite other ingredients such as "a catalytic amount of GDP, GTP or both GDP and GTP" or "a fucosyltransferase, a catalytic amount of guanosine diphospho-mannose pyrophosphorylase" that can be present in a contemplated system.

These amendments are supported throughout the specification, and particularly in the schemes illustrated

therein. Thus, Scheme 19 (page 55) illustrates the presence of GDP and GTP, a fucosyl-transferase, and a guanosine diphospho-mannose pyrophosphorylase". The line bridging pages 37 and 38 discusses the use of a catalytic amount of guanosine diphospho-mannose pyrophosphorylase. The first sentence of the "Detailed Description of the Invention", at page 12, discusses use of catalytic amounts of nucleotides, with citations to the two following schemes wherein the only nucleotides used for fucosylation are GDP and GTP. The use of catalytic amounts of nucleotides are also discussed at page 15, lines 12-22, and in original claim 3. The use of catalytic amounts is also discussed in Section "D. Recycling nucleotides" that begins near the middle of page 42.

It is thus seen that no new matter has been added.

B. Rejection Under 35 USC §112, Second Paragraph

1. "System"

Claims 21-29 were rejected as allegedly indefinite because of their use of the word "system" for the claimed subject matter. The Action asserts that a "system" may be an apparatus or device, and also may be a composition of matter such as a solution or a process. Because a "system" can allegedly be so many things, the claims are asserted to be indefinite. The claims are said to be construed in the Action as being a solution comprising the enzymes recited. This basis for rejection cannot be agreed with and is respectfully traversed.

It is first noted that a search of the claims of patents in the US Patent Office data base revealed that more than 500,000 presumptively valid US patents use the word

"system" in their claims. A partial print out of such a list is attached as Exhibit I.

As is pointed out in the last full paragraph of page 4, "an in vitro reaction system" refers "to an inert or nonreactive container or compartment housing the reagents used to conduct the . . . reactions." It is thus believed that this basis for rejection should be withdrawn.

2. Claim 26

Claim 26 was pointed out to be confusing in mixing the reagents from two reaction types. The Examiner is thanked for noting this point, and the dependency of claim 26 has been amended accordingly, thereby making the basis for rejection moot.

C. Rejections Under 35 USC §103(a)

1. Bergh et al In View of Schachter et al.

Claims 21-23 have been rejected under Section 103 as allegedly obvious from the combined teachings of Bergh et al. US Patent No. 4,925,796 (hereinafter Bergh) in view of Schachter et al. *Methods in Enzymology* (hereinafter Schachter). The Action asserts that Bergh discloses the use of a fucosyltransferase along with GDP-fucose for the fucosylation of oligosaccharides of glycoproteins. Bergh does not, however, include the claimed GDP-fucose forming enzymes. Thus, the only pertinent disclosures of Bergh are to the single transferase enzyme, GPT-fucose and a fucosyl acceptor. The Schachter teaching is used to provide that added nucleoside-diphospho fucose forming enzyme (fucose pyrophosphorylase), although it actually teaches use of a unseparated mixture of that enzyme and a fucose kinase for

forming fucose 1-phosphate. Based on those two disclosures, the present claims are said to be obvious. This basis for rejection cannot be agreed with and is respectfully traversed.

It is first noted that Schachter teaches the preparation of GDP-fucose for its own sake, or at least without any assertion of the purpose for its preparation. There is no suggestion aside from the present specification and claims to combine the two enzymes recited in the claims, let alone a suggestion of a reasonable expectation of achieving the present invention *In re Vaeck*, 947 F.2d 488, 493; 20 USPQ2d 1438, 1442 (Fed.Cir. 1991). Indeed, the Schachter paper teaches that the two enzymes there present are utilized separately in that fucose kinase is precipitated and separated from the remainder of the preparation **prior** to the preparation of GDP-fucose using the prepared fucose 1-phosphate, GTP and the GDP-fucose forming enzyme. (See, paragraph bridging pages 286-287, first sentence.) Thus, the relied-on teaching teaches away from the subject matter claimed in claims 23 and 25 that were rejected from a combination of disclosures that included this teaching. Thus, on this basis alone, this rejection should be withdrawn.

Additionally, there is neither teaching nor suggestion that the two enzymes recited in claim 21 would not interfere with each other. Indeed, in native form, the fucosyltransferase is membrane-bound (page 18, first sentence), and therefore may not interact with the GDP-fucose forming enzyme. There is neither teaching nor suggestion in either relied-on disclosure that the two enzymes would be compatible together, so there is not the reasonable expectation of success required by *In re Vaeck*. Again, therefore, this rejection should be withdrawn.

Still further, Claim 21 recites that the nucleoside-diphospho fucose-forming enzyme is present in a catalytic amount. There is again neither teaching nor suggestion that such an amount be present. Indeed, Schachter that is relied-on for teaching the use of that enzyme utilizes a reaction mixture containing 27 micromoles of substrate -L-[¹⁴C]fucose 1-phosphate in 300 ml of buffer to which 150 ml of the enzyme preparation are admixed. It hardly seems that that amount contains a catalytic amount of enzyme. Again, therefore, this rejection should be withdrawn.

2. Bergh In View of Schachter, and
Further in View of Demain et al.

Claims 21-25 were also rejected as allegedly obvious over the above-discussed teachings of Bergh and Schachter further in view of Demain et al. US Patent No. 4,178,210 (hereinafter Demain). The Bergh and Schachter teachings were taken as described before and the Demain teaching was said to disclose the use of ATP in the regeneration of pyruvate kinase, which was said to have pertinence here because "Schachter's process requires ATP... ." It was thus asserted that

"the artisan of ordinary skill would have considered the use of the well-known PEP/pyruvate kinase ATP regeneration system an obvious method of regenerating the ATP required for the ultimate synthesis of the GDP-fucose required in Bergh's fucosylation process."

This basis for rejection cannot be agreed with and is therefore, respectfully traversed.

The deficiencies of the combination of the disclosures of Bergh and Schachter in regard to independent claim 21 have already been discussed and are repeated here by reference. As such, and inasmuch as independent claim is seen to be patentable over the combined teachings of those disclosures, the Demain teaching adds nothing as to claim 21 and cannot make any of the dependent claims obvious. Thus, this rejection should be withdrawn.

Additionally, the rejected independent claim does not require an "ATP regeneration system", nor is such a system recited. Furthermore, ATP is not used in a GDP regenerating system disclosed herein, and is not seen "to be required for the ultimate synthesis of the GDP-fucose required in Bergh's fucosylation process." Thus, the Demain teachings are not seen to have any relevance here and Demain should be withdrawn as a reference against the claims along with this rejection.

3. Bergh In View of Schachter and Demain, and
Further in View of Yamamoto et al.

Claims 21-29 were rejected as allegedly obvious over the combined teachings of Bergh, Schachter and Demain as already discussed and further in view of the teachings of Yamamoto et al. (hereinafter Yamamoto). Yamamoto is cited for its disclosure of a NADH/NADPH regenerating system and the preparation of GDP-fucose from GDP-mannose that is recited in dependent claim 26 and the conversion of GDP-mannose to GDP-fucose that are recited in claims 28 and 29.

The Action mixed the page numbers of the Schachter and Yamamoto disclosures. The Action also misquoted from the relied-on art. It is therefore difficult to determine exactly the basis for the rejection.

For example, it is said that Yamamoto discloses that the GDP-fucose synthesized by transformation of GDP-mannose is suitable for use as a fucosyltransferase substrate. The first sentence of page 285, presumably of Yamamoto is cited. Unfortunately, Yamamoto begins on page 823, and its first sentence merely says that GDP-fucose is the substrate for that enzyme. Schachter begins on page 285 and its first sentence teaches the use of fucose kinase to prepare fucose phosphate that is then used as a substrate for GDP-fucose pyrophosphorylase in the preparation of GDP-fucose.

The inadvertent errors of the Action notwithstanding, the Action asserts that having all of the enzymatic tools available, the worker of ordinary skill would have recognized solely from the recited art that those enzymes could be put together to provide a single composition. This basis for rejection cannot be agreed with and is respectfully traversed.

The deficiencies of the combination of the disclosures of Bergh and Schachter in regard to independent claim 21 have been discussed twice above and are repeated here by reference. The Demain teaching was shown to be irrelevant to the claimed subject matter. Independent claim 21 is patentable over those combined teachings, and the Yamamoto teaching adds nothing as to claim 21 and cannot make any of the dependent claims obvious. Thus, this rejection should be withdrawn.

Yamamoto was published in 1984. That paper discloses that GDP-fucose is the substrate for fucosyl transferases used

in preparation of blood group and other antigens. Schachter was published in 1974. Between them, they recite the enzymes and other constituents of claims 21-29. If the claims were as obvious as asserted in the Action, Yamamoto had all of the elements and should have put it all together in 1984. Yamamoto did not do so. It took another seven years for the proper person, Dr. Wong, to put the pieces together and figure out that the enzymes could be compatible and all be present together with their substrates and other ingredients.

It is submitted that most things look obvious in hindsight. A hindsight reconstruction is just what is present in this Action and these several bases for rejection. The various pieces have been found in scattered disclosures and put together in view of the application's own disclosures to make the invention appear to be obvious. It is submitted that the artisan of ordinary skill would recognize nothing in regard to these claims from the relied-on prior art and that only looking back with the present disclosure as a guide could one come to the present invention. This rejection should be withdrawn.

It is further submitted that even if were proper to take the necessary elements from the relied-on teachings and put them together, the result would not define the invention. There is no teaching in the relied-on art to use a catalytic amount of a nucleoside-diphospho fucose-forming enzyme. As such, the rejection must again fail for lack of establishing a *prime facie* case, and should be withdrawn.

4. Claims 52-57 and the Art

The previous discussion has centered around the remainder of claims 21-29. Added claims 52-57 are also neither

taught nor suggested by the relied-on art. Claims 52 and 53 are dependent upon claim 21 and cannot be obvious if the independent claim is not obvious as already noted. Independent claim 54 recites that the system comprises "fucosyltransferase, a catalytic amount of guanosine diphospho-fucose pyrophosphorylase and a catalytic amount of GDP, GTP or both GDP and GTP", whereas independent claim 56 recites a system comprising a "fucosyltransferase, a catalytic amount of guanosine diphospho-mannose pyrophosphorylase and a catalytic amount of GDP, GTP or both GDP and GTP". It is thus seen that the new independent claims recite the fucosyltransferase of claim 21, a catalytic amount of a specific nucleoside-diphospho fucose forming enzyme where the same enzyme was not specified in claim 21, and catalytic amounts of one or both of GDP and GTP. Inasmuch as the relied-on art does not make obvious claims 21-29, that art also cannot make obvious the new claims.

D. Provisional Double-Patenting Rejection

Claims 21-29 were provisionally rejected under the judicially created doctrine of "obviousness-type" double patenting in view of claim 11 US Patent No. 6,168,934. A Terminal Disclaimer and its fee are enclosed.

E. Summary

Claims 1 through 20, 27 and 30 through 51 have been cancelled. Claims 21, 22, 23, 25, 26, 28 and 29 have been amended. Claims 52 through 57 have been added. Each of the bases for rejection has been dealt with and overcome or otherwise made moot.

Serial No. 09/992,680


It is therefore believed that this application is in condition for allowance of all of the pending claims. An early notice to that effect is earnestly solicited.

A Petition of an Extension of Time and its required fee are enclosed. No additional claim fee is believed necessary in view of the filing fee already paid, the claims cancelled and the fact that there are fewer than twenty claims and a total of three independent claims in the case.

No further fee or petition is believed to be necessary. However, should any further fee be needed, please charge our Deposit Account No. 23-0920, and deem this paper to be the required petition.

The Examiner is requested to phone the undersigned should any questions arise that can be dealt with over the phone to expedite this prosecution.

Respectfully submitted,

By 
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Enclosures

Terminal Disclaimer and fee
Petition and fee
Exhibit I

Serial No. 09/992,680

CERTIFICATE OF MAILING

I hereby certify that this Amendment and Reply and its stated enclosures, Terminal Disclaimer and its fee, and Petition for Two-Month Extension of Time and its fee are being deposited with the United States Postal Service with sufficient postage as First Class Mail in an envelope addressed to: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450, on May 13, 2004.


By  _____
Edward P. Gamson



EXHIBIT I

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ACLM/system: 514021 patents.

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PAT. NO.	Title
1 6,708,335	Tracking viewing behavior of advertisements on a home entertainment system
2 6,708,334	DVD navigation system with multiple threads
3 6,708,333	Method and system for reporting failures of a program module in a corporate environment
4 6,708,332	Run-time modules for dynamically adjusting computer operation
5 6,708,331	Method for automatic parallelization of software
6 6,708,329	Method and apparatus for producing modules compatible with a target system platform from simulation system modules utilized to model target system behavior
7 6,708,328	Employment of value of unknown in portion of partial state space for analysis of part of system
8 6,708,327	System for accessing and testing evaluation modules via a global computer network
9 6,708,326	Method, system and program product comprising breakpoint handling mechanism for debugging and/or monitoring a computer instruction sequence
10 6,708,324	Extensible automated testing software
11 6,708,323	Method and apparatus for verifying mask pattern data according to given rules
12 6,708,320	Optimization method for element placement

- 13 6,708,316 System for and method of designing and manufacturing a semiconductor device
- 14 6,708,311 Method and apparatus for creating a glossary of terms
- 15 6,708,310 Method and system for implementing user-defined codeset conversions in a computer system
- 16 6,708,309 Method and system for viewing scalable documents
- 17 6,708,308 Soft output viterbi algorithm (SOVA) with error filters
- 18 6,708,298 Method for guaranteeing a minimum data strobe valid window and a minimum data valid window for DDR memory devices
- 19 6,708,297 Method and system for monitoring errors on field replaceable units
- 20 6,708,296 Method and system for selecting and distinguishing an event sequence using an effective address in a processing system
- 21 6,708,293 Method and apparatus for analyzing performance of data processing system
- 22 6,708,292 System, method and software for protocol analyzer remote buffer management
- 23 6,708,291 Hierarchical fault descriptors in computer systems
- 24 6,708,290 Configurable debug system with wire list walking
- 25 6,708,289 Microcomputer, electronic equipment and debugging system
- 26 6,708,286 Standby SBC backplane
- 27 6,708,285 Redundant controller data storage system having system and method for handling controller resets
- 28 6,708,284 Method and apparatus for improving reliability in microprocessors
- 29 6,708,283 System and method for operating a system with redundant peripheral bus controllers
- 30 6,708,282 Method and system for initiating computation upon unordered receipt of data
- 31 6,708,281 Methods for providing estimates of the current time in a computer system including a local time source having one of several possible levels of trust with regard to timekeeping
- 32 6,708,280 Method and apparatus for allowing a battery to preserve charge in a handheld device without an supplying unregulated voltage to selected internal components
- 33 6,708,278 Apparatus and method for awakening bus circuitry from a low power state
- 34 6,708,277 Method and system for parallel bus stepping using dynamic signal grouping
- 35 6,708,276 Architecture for denied permissions in Java

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- 36 [6,708,274](#) [Cryptographically protected paging subsystem](#)
 - 37 [6,708,271](#) [INTERACTIVE MULTI-MODULE SYSTEM HAVING A COMMUNICATION MANAGER FOR ACHIEVING LINKED OPERATION OF PLURALITY OF MODULES AND FOR DEFINING WHETHER AND HOW AN INDIVIDUAL MODULE CAN ACCESS A PARTICULAR FUNCTION](#)
 - 38 [6,708,269](#) [Method and apparatus for multi-mode fencing in a microprocessor system](#)
 - 39 [6,708,266](#) [Central processing unit and system counting instructions in a queue storage and outputting a fetch request when the count value is 0 or 1 to produce a next instruction address output](#)
 - 40 [6,708,265](#) [Method and apparatus for moving accesses to logical entities from one storage element to another storage element in a computer storage system](#)
 - 41 [6,708,262](#) [Memory device command signal generator](#)
 - 42 [6,708,258](#) [Computer system for eliminating memory read-modify-write operations during packet transfers](#)
 - 43 [6,708,257](#) [Buffering system bus for external-memory access](#)
 - 44 [6,708,256](#) [Memory-to-memory copy and compare/exchange instructions to support non-blocking synchronization schemes](#)
 - 45 [6,708,254](#) [Parallel access virtual channel memory system](#)
 - 46 [6,708,253](#) [Processor memory system](#)
 - 47 [6,708,251](#) [Disk drive having separate interfaces for host commands and audiovisual data](#)
 - 48 [6,708,248](#) [Memory system with channel multiplexing of multiple memory devices](#)
 - 49 [6,708,247](#) [Extending universal serial bus to allow communication with USB devices at a remote location](#)
 - 50 [6,708,244](#) [Optimized I2O messaging unit](#)
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